

Patent Claims

1. An axial-flow thermal turbomachine having a metallic rotor (1), in which rotor blades (3) made of
5 an intermetallic compound are mounted in a circumferential groove to form a row of blades, characterized in that at least two rotor blades (3') which are at a uniform distance from one another and are made of a more ductile material are arranged in said row of
10 blades between the intermetallic rotor blades (3), the rotor blades (3') made of the more ductile material either being considerably longer than the intermetallic blades (3) or, if they are of the same length, having a different blade tip shape than the intermetallic blades
15 (3).

2. The turbomachine as claimed in claim 1, characterized in that intermediate pieces (4) made of a more lightweight material than the material of the
20 rotor (1), preferably made of an intermetallic compound or a titanium alloy, are additionally arranged between two adjacent rotor blades (3, 3') of a row of blades.

3. The turbomachine as claimed in claim 1 or 2,
25 characterized in that the intermetallic compound for the rotor blades (3) and the intermediate pieces (4) is a γ -titanium aluminide alloy or an orthorhombic titanium aluminide alloy.

30 4. The turbomachine as claimed in claim 3, characterized in that the γ -titanium aluminide alloy has the following chemical composition (in % by weight): Ti-(30.5-31.5)Al-(8.9-9.5)W-(0.3-0.4)Si.

35 5. The turbomachine as claimed in one of claims 1 to 4, characterized in that the blade tips (5) of the rotor blades (3) can be coated with a hard phase.

6. The turbomachine as claimed in claim 5, characterized in that a wear-resistant layer can be applied to the blade tips by means of laser welding.

5 7. The turbomachine as claimed in one of claims 1 to 6, characterized in that the turbomachine is a high-pressure compressor of a gas turbine with a rotor (1) which substantially comprises a stainless Cr-Ni steel.

10 8. The turbomachine as claimed in one of claims 1 to 7, characterized in that the rotor blades (3') which are more ductile than the intermetallic rotor blades (3) consist of a stainless Cr-Ni steel or a heat-resistant turbine blade steel or a superalloy.

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